



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,739	06/06/2006	Stefan Schneweis	06060	8690
23338 7590 10/30/2008 DENNISON, SCHULTZ & MACDONALD 1727 KING STREET SUITE 105 ALEXANDRIA, VA 22314				
EXAMINER MILLER, MICHAEL G				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
10/30/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,739

Applicant(s)

SCHNEWEIS, STEFAN

Examiner

MICHAEL G. MILLER

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

- 1) Examiner notes the amendments presented 27 JUN 2008. The amendments introduce no new matter and are therefore accepted. As a result of the amendments, Claims 1-8 remain cancelled, Claims 9-14 are newly canceled and Claims 15-22 are pending.

Response to Arguments

- 2) Applicant's arguments filed 27 JUN 2008 have been fully considered but they are not persuasive.
- 3) Applicant's first argument is that the prior art does not teach producing a planar susceptor support. Examiner respectfully points out that claims do not require a completely planar susceptor support; indeed, the one claim which discusses the concept of planarity merely that one surface of the framework be planar. Examiner then points to PG 0003 of Delperier et al, which cites cylindrical shapes with one end closed. The closed end of a cylinder is a planar surface.
- 4) Applicant's second argument is that the entire structure of the prior art must be densified to prevent material leakage. Examiner respectfully disagrees; only the surface in contact with the material to be contained must be densified to prevent material leakage. An example of this is cake; the top surface is generally continuous to keep frosting on top of the cake, while the interior of the cake contains many voids to build the volume and texture of the cake.

- 5) Applicant's third argument is that the figures of the prior art show that the bowls are non-porous. Looking at the cited figures, a gas flow structure is shown that clearly encourages formation of densifying material at the surfaces of the bowls (see the arrows indicating gas flow in any of Figures 1, 3, 5, 7, or 11 of Delperier et al). However, the support mechanism for the bowls (example at Figure 1 Item 22-1, 22-2, 22-3) protects the endcap portion of the bowls, which means the endcaps of the bowls remain porous. As such, the densified bowls will have densified inner and outer surfaces with a porous structure between the layers which is accessible to the atmosphere via the untreated endcap portions of the bowls.
- 6) Applicant's fourth argument is covered on the grounds discussed above.
- 7) Applicant's fifth argument is that the prior art fails to teach a graduated system of coatings. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Valentian shows that either carbon or silicon carbide produces a densified structure when contacted with a porous carbon preform of the type discussed in Delperier et al (Column 6 Lines 46-66 of Valentian) and Carroll et al further shows that a graduated layer structure incorporating both the materials of Valentian provides better adhesion of the densified material to a porous carbon preform, for example as used by Delperier et al (Column 2 Line 64 - Column 3 Line 3 and Column 5 Lines 26-46 of Carroll).

- 8) Applicant maintains all prior grounds of rejection from the previous Office Action.

Claim Rejections - 35 USC § 102

- 9) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- 10) Claims 15-19 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Delperier et al (U.S. PGPub 2002/0076491, hereinafter '491).
- 11) With regard to Claim 15, '491 teaches a method for producing a substrate designed to support an object for processing wherein carbon is used as the material for the substrate, and gas outlet or passage openings are formed, interspersed through the substrate, characterized by the following process steps:
- a) Production of a framework made of carbon and/or SiC fibers (PG0040 teaches a method of making substrates from carbon fibers) and
 - b) Stabilization of the framework with a pyrocarbon coating that forms a matrix, such that the stabilized framework has a porosity level that forms the gas outlet or passage openings (PG0086 teaches pyrolytic carbon impregnation; Figures 9, 10, 12 and 13 show that porosity of the substrate is maintained after densification, note the dark spaces exterior to the brighter reflective rings of carbon),

- c) A framework stabilized in this manner, or a segment of the framework, being used as the substrate (PG0003 teaches that these preforms can be used as supports for crucibles to process semiconductor wafers, which makes it a substrate designed to support an object for processing; a crucible is an object for processing).

12)With regard to Claim 16, '491 teaches a method according to claim 15, characterized in that:

- a) The fibers are stabilized by means of vapor infiltration (CVI) (PG0085-0088).

13)With regard to Claim 17, '491 teaches a method according to claim 15, characterized in that:

- a) Stabilized felt or non-woven materials, or Stabilized fabric layers are used as the framework (PG0085; carbon fiber plies consolidated in a resin).

14)With regard to Claim 18, '491 teaches a method according to claim 15, characterized in that:

- a) The fibers are stabilized exclusively with carbon (PG0086, pyrolytic carbon).

15)With regard to Claim 19, '491 teaches a method according to claim 15, characterized in that:

- a) The fibers are stabilized with a series of one coating made of carbon (PG0085 – 0088; a series of one coating made of carbon is used to stabilize the fibers).

16)With regard to Claim 22, '491 teaches a method according to claim 15, characterized in that:

- a) The stabilized framework has at least one planar surface (PG 0003; the paragraph cites cylindrical shapes with one closed end, and the closed end of a cylinder is a planar surface).

Claim Rejections - 35 USC § 103

17)The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18)The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- (1) Determining the scope and contents of the prior art.
- (2) Ascertaining the differences between the prior art and the claims at issue.
- (3) Resolving the level of ordinary skill in the pertinent art.
- (4) Considering objective evidence present in the application indicating obviousness or nonobviousness.

19)Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over '491 as applied to claim 15 above, and further in view of Valentian (U.S. Patent 5,132,145, hereinafter '145) and Carroll et al (5,397,595, hereinafter '595).

20)With regard to Claim 20, '491 teaches a method according to claim 15, except for the following limitation:

- a) The fibers are stabilized with a graduated system of coatings that transitions from carbon to silicon carbide.
- b) '491 teaches forming of a carbon coating before the deposition of pyrolytic carbon (PG0085). However, it does not teach coating with silicon carbide.
- c) '145 teaches coating of a carbon preform used as an integral crucible support. This coating is performed by CVD and uses either carbon or silicon carbide as the coating. (Column 6 Lines 46-66).
- d) Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have combined the methods of '491 and '145 since both methods teach methods of making CVI-treated crucible supports.
- e) '595 teaches that a graded composition of coating enhances the bond of the fiber to the matrix, producing a more durable preform (Column 2 Line 64 - Column 3 Line 3) and teaches a graded C-SiC coating (Column 5 Lines 26-46).
- f) Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the method of '491/'145 to produce a graded coating as taught in '595, because '491/'145 wants to produce a densified carbon preform and '595 teaches that a graded densification produces a product with better adhesion of the densification material to the preform.

21) Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over '491 as applied to claim 15 above.

22)With regard to Claim 21, '491 teaches a method according to claim 15, except for the following limitation:

- a) The stabilized framework has a porosity p , where $5\% < p < 95\%$.
- b) The porosity of a densified material is a result effective variable with regards to the final density of the material, as air has a lower density than solid materials. Therefore, in two identical volumes of a given material with different porosity, the material with higher porosity will always have a lower density.
- c) '491 discloses the claimed invention except for the final porosity of the densified material. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to control the porosity of the material with regards to its intended end use, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 223 (CCPA 1955).

Conclusion

23)Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL G. MILLER whose telephone number is (571)270-1861. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/581,739
Art Unit: 1792

Page 10

/Michael G. Miller/
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792